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ANNUAL REPORT OF THE DIRECTOR-GENERAL ON THE ACTIVITIES OF THE ORGANIZATION IN 1995, INCLUDING PROGRESS REPORT ON SPECIFIC ACTIVITIES

Arrangements for the establishment of an international centre for hydrogen energy technologies

Report by the Director-General

Summary

Reviews progress made and considerations related to the establishment of an international centre for hydrogen energy technologies. Presents the arrangements for implementation of the centre based on voluntary contributions to UNIDO.

CONTENTS

		Paragraphs	*Page*
Introduction		1 - 3	2
Chapter			
I.	PAST AND ONGOING UNIDO ACTIVITIES ON PROMOTION OF HYDROGEN ENERGY TECHNOLOGIES	4 - 5	2
II.	FEASIBILITY STUDY	6 - 7	2
III.	ESTABLISHMENT OF THE CENTRE	8 - 15	3
IV.	ACTION REQUIRED OF THE BOARD	16	4
Annex	PROPOSED INSTITUTIONAL STRUCTURE OF THE CENTRE		5

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Introduction

1. Many industrialized countries have recognized the future importance of hydrogen as an environmentally clean energy alternative, and are conducting research into all aspects of the hydrogen energy system. They possess the technological know-how for its implementation. As energy and environmental problems are global problems, no one country can solve them by itself. No border barriers can stop pollution, acid rains and the greenhouse effect from spreading. Therefore, it is to the advantage of both the industrialized and the developing countries to cooperate in the following areas:

(a) Research and development (R and D) for the development and application of hydrogen energy technologies;

(b) The transfer of such technologies;

(c) Establishment of the appropriate industries;

(d) Initiation of a durable and environmentally compatible energy system based on hydrogen.

2. Most developing countries have established national centres for research on renewable energy sources, including solar energy. Some of these conduct research on hydrogen production. However, no single developing country presently performs R and D work covering all aspects of the hydrogen energy system (production, storage, transmission, distribution, utilization by the energy-consuming sectors, environmental impact studies, and economics of the system). It is recognized in many countries that national efforts, whether scientific and technological or industrial and commercial, would be considerably facilitated by international interaction. The scientific and technological community feels that it is imperative to have the opportunities for interaction and exchanges on an international scale.

3. The creation of the centre would be the most practical and effective means of assisting, in an integrated fashion, the strengthening of national technological capabilities in this important field. The spin-off effects of the centre could in fact be considerable, not only in the developing regions of the world, but also in the industrialized countries. Given the general lack of infrastructure and financial resources to support an adequate R and D effort in this field in developing countries, the centre may well be the only means by which they can get started in this crucial area of knowledge and skills, ensure that optimal technology choices are made, local problems addressed and major natural resources utilized.

I. PAST AND ONGOING UNIDO ACTIVITIES ON PROMOTION OF HYDROGEN ENERGY TECHNOLOGIES

4. The relevance of hydrogen energy technologies for developing countries was examined by UNIDO during the late 1980s-early 1990s. In 1988 UNIDO carried out a study entitled "Hydrogen Energy Technology for Developing Countries". The study concluded that the necessary technologies for the near-term application of hydrogen energy exist and that these technologies are especially attractive for developing countries. In 1991, the UNIDO report "Hydrogen Energy Initiation in Developing Countries" gave special consideration to the technologies suitable for developing countries. Among other recommendations, it was suggested to establish an international centre for hydrogen energy technologies to conduct R and D and training programmes for personnel to run the hydrogen energy system. Following these recommendations UNIDO, in cooperation with the Asian and Pacific Centre for Transfer of Technology (APCTT) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), arranged in 1992 several expert group meetings on hydrogen as an energy alternative for developing countries. The meetings were attended by experts from China, Cuba, Guatemala, Honduras, India, Indonesia, Jamaica, Malaysia, Mexico, Pakistan, Philippines, Sri Lanka, Thailand and Viet Nam. These meetings confirmed the growing interest from developing countries for hydrogen energy technologies as a viable option for the future energy system. The meetings strongly endorsed the UNIDO initiative for the establishment of an international centre for hydrogen energy technologies.

5. In 1992 the Government of Turkey took up the issue of international cooperation in the area of hydrogen energy technologies and supported a UNIDO project to carry out a feasibility study for the establishment of an international centre for hydrogen energy technologies in Turkey.

II. FEASIBILITY STUDY

6. In recent Annual Reports of UNIDO (1993-1995) references were made to the progress achieved in carrying out a feasibility study for the establishment of an international centre for hydrogen energy technologies. As part of the feasibility study, visits to numerous Governments, government agencies, international organizations and research institutes were undertaken, including Turkey—the proposed host country—China, Egypt, France, Germany, India, Italy, Japan, Kuwait, the

United States of America, the European Union, the International Energy Agency, the Global Environmental Facility and the World Bank. Government and agency representatives in all countries visited expressed a very positive attitude to the proposed centre; some indicated strong support and all provided suggestions concerning the proposal. The international scientific and technological community has expressed willingness to participate in various stages of the centre's research and training activities. The importance of cooperation with ongoing regional, national and international research and development programmes in this field has been emphasized.

7. A meeting of international experts was held in May 1996 at Istanbul to review and discuss the feasibility report. The meeting was attended by 21 high-level international experts from 10 countries who reviewed the feasibility study. The proposal for establishing the centre to promote introduction of hydrogen as a clean source of energy for the benefit of both developing and developed countries was unanimously supported by the international experts.

III. ESTABLISHMENT OF THE CENTRE

8. The preparatory activities have confirmed the essential role that the centre can play in international cooperation in the field of hydrogen energy technologies and the need for the continued involvement of UNIDO in its establishment and operation. To attract high-level researchers and engineers required for the creation of an institution of excellence, to generate voluntary contributions and financial support, and to have an adequate impact on industrial and technological development, it is considered essential for the centre to be under the auspices of UNIDO.

9. In the light of the foregoing, it is opportune to consider the arrangements for the establishment of the centre. International centres of excellence are effective mechanisms of international cooperation for helping developing countries in long-term capacity-building in high technology areas. Within thematic priority 4 (innovation, productivity and quality for international competitiveness), a major programme area has been the promotion of international and regional centres covering developments in new technologies with wide cross-sectoral impact in order to allow broader participation and access in developing countries to state-of-the-art research and development and commercialization of new technologies.

10. The centre would provide a variety of benefits to its participants, both in industrialized and developing countries, including the following:

(a) A proper mechanism for technology transfer would be created, which would encourage international cooperation and eliminate duplication of effort;

(b) New opportunities for industries involved in hydrogen energy-related areas would be defined;

(c) Through the usage of an energy system reducing atmospheric, marine and soil pollution, access to renewable energy sources and sustainable economic development would be provided.

11. For developing countries in particular, the centre would bring the following additional benefits:

(a) Support for the establishment of a clean and permanent energy system based on indigenous primary energy sources;

(b) Assistance in attaining a greater level of energy independence;

(c) Access to the technologies involved in the implementation of hydrogen energy systems;

(d) Access to information on hydrogen energy research and development world-wide;

(e) Promotion of cooperative research and development projects between developing and industrialized countries;

(f) Assistance in acquiring the technical skills required for the changes anticipated in energy systems in the twenty-first century;

(g) Assistance in preparation for the forthcoming period of energy source conversion;

(h) Assistance to current energy exporters in becoming exporters of hydrogen energy.

12. The long-term mission of the centre would be to act as a bridge between industrialized and developing countries, in closing the gap between R and D organizations, innovative enterprises and the market-place, so as to stimulate appropriate applications of hydrogen energy technologies in industrial development throughout the world in general and in developing countries in particular. The objectives of the centre would be the following:

(a) To further, for the benefit of developing and developed countries, the application of hydrogen for peaceful aims, as well as the development and transfer of hydrogen-related technologies, including the associated technology management processes;

(b) To further the advancement of applied research and development on hydrogen energy, with direct involvement of developing country scientists and technologists;

(c) To support the strengthening of developing countries' research, development and technology transfer centres and programmes, including mechanisms for supporting existing industrial enterprises and the creation of new enterprises involved with applications of hydrogen energy technologies.

13. To fulfil these objectives, the centre would carry out the following main functions: long- and short-term training through conducting workshops and scientific meetings; operation of learning-by-doing programmes for visiting scientists and technologists, research, development and technology transfer activities, advisory services, cooperation with industry, networking, cooperation with and affiliation of relevant national institutions, and transfer and management of related technologies. The centre would promote and facilitate the introduction of hydrogen energy technologies in participating countries through techno-economic studies, including technology monitoring and forecasting, R and D, technology transfer, training and tools development, fellowships and advisory services. The emphasis of the centre's research activities would be on applied research and development, and not on basic research. These activities would be supported by a database through the Internet and other means, including pertinent information on research results from laboratories and institutes worldwide, and on related technologies, products and services.

14. The development of international centres as institutions of excellence is very much dependent on the cooperation of the scientific and technological community, and on donor support. The centre would be financed exclusively from voluntary contributions to UNIDO for that purpose. The foregoing considerations have been kept in mind in discussions with the representatives of the Government of Turkey, who have indicated that the Government will allocate the required land, will build the centre's premises in Istanbul, and will support its operations under a special-purpose contribution from Turkey.

15. With regard to the constitutional mandate of UNIDO, it is proposed that the centre will be established as an autonomous institution within the legal framework of UNIDO. The institutional structure which is proposed for discussions with the Government of Turkey is shown in the annex to the present document.

IV. ACTION REQUIRED OF THE BOARD

16. The Industrial Development Board is invited to consider the following draft decision:

"The Industrial Development Board:

"(a) Takes note of the report of the Director-General on the initial proposal of the Government of Turkey for the establishment of an international centre for hydrogen energy technologies (IDB.16/26), financed exclusively by voluntary contributions to UNIDO, as an autonomous technological institution, within the legal framework of UNIDO, and with the proposed institutional structure as stated in the annex to document IDB.16/26;

"(b) Requests the Director-General to pursue the discussions with the Turkish authorities for the establishment and long-term operation of the centre;

"(c) Further requests the Director-General to submit a report to the Board at its seventeenth session on the progress made in the establishment of the centre;

"(d) Invites the General Conference at its seventh session to take note of the present decision."

Annex

PROPOSED INSTITUTIONAL STRUCTURE OF THE CENTRE

General

1. The centre will be financed exclusively from voluntary contributions to be made to UNIDO for the purpose of the centre. No expenditure may be charged to the UNIDO regular budget except to the extent that the regular budget is reimbursed for such expenditures. To reimburse administrative and other support costs by the UNIDO Secretariat, the Director-General shall determine the overhead rate at which expenditures for centre activities shall be charged. Provision shall also be made for reserves for the liquidation of claims from staff of the centre and from third parties.

2. The Government of Turkey and UNIDO shall conclude the necessary agreements defining the objectives, the financial contributions of the Government of Turkey and the legal status of the centre and providing privileges and immunities, exemptions and benefits at the level comparable to that provided to other agencies of the United Nations. The agreement concerning the seat for the centre shall also contain, as an annex, a description of the land and buildings which shall be placed at the disposal of UNIDO free of charge as a contribution of the Government of Turkey to be used as the premises of the centre, in accordance with and pursuant to the terms of the agreement. The agreements shall be concluded without delay in order to enable UNIDO to implement the institutional structure set out herein.

Director-General

3. The Director-General of UNIDO shall be the chief administrative officer of the centre in accordance with Article 11 of the Constitution of UNIDO. In that capacity he shall ensure that the centre is administered in accordance with the Financial and Staff Regulations and Rules of UNIDO and he may, as necessary, issue special rules and administrative instructions or circulars for the centre. The Director-General shall appoint the Managing Director and other staff of the centre in accordance with the Staff Regulations and Staff Rules of UNIDO.

Managing Director of the centre

4. Subject to the authority of the Director-General of UNIDO as chief administrative officer, the Managing Director shall be responsible for the management and administration of the centre. He shall prepare the programme and budget of the centre having considered the recommendations of the International Scientific Advisory Committee.

Steering Committee

5. A Steering Committee will be composed of two representatives of the host Government, representatives of major donors, the Director-General of UNIDO or his representative, and a representative of developing countries selected on the proposal of the Director-General on a rotating basis. The Steering Committee shall review and agree on the draft programme and budget taking into account the recommendations of the International Scientific Advisory Committee, the amount of resources offered by each donor and the priorities attached by them to the different activities of the centre. The Steering Committee will also suggest candidates for appointment as Managing Director of centre, who will be a well-established expert in hydrogen energy. The Managing Director shall submit the programme and budget, as agreed by the Steering Committee, to the Director-General of UNIDO for his approval.

International Scientific Advisory Committee

6. An International Scientific Advisory Committee will be constituted by the Director-General of UNIDO, taking into consideration the proposals of the Steering Committee and of the Managing Director. The Director-General of UNIDO or his representative will participate in the work of the International Scientific Advisory Committee. The Committee will advise on the scientific aspects of the centre's work, normally meeting at least once a year. In particular, the Committee shall review the draft programme and budget and make its recommendations thereon.

Programme and budget

7. The Director-General of UNIDO will establish under the Financial Regulations and Financial Rules of UNIDO a trust fund for the purpose of the centre.

8. The centre's programme and budget will be for a five-year period and shall be extended biennially for five-year periods, following UNIDO's budget cycles. Donor commitments are expected to be made on the basis of such five-year programmes. Payments may be made on a yearly basis.